बीड़ी — विशिष्टि

(पांचवाँ पुनरीक्षण)

Bidis — Specification

(Fifth Revision)

ICS 65.160

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January 2022 **Price Group 4**

Tobacco and Tobacco Products Sectional Committee, FAD 04

FOREWORD

This Indian Standard (Fifth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Tobacco and Tobacco Products Sectional Committee had been approved by the Food and Agriculture Divisional Council.

Bidis are hand rolled smoking articles sold both in branded and unbranded form. There being great variation in the *bidis*, it is necessary to lay down certain quality criteria, the broad objective of which will be to enable the consumers to get a standard product.

This standard was first published in 1961. Subsequently, the first revision was issued in 1970 incorporating cylindrical *bidis*, tolerances on declared values of length and mass of 1 000 *bidis* to ensure uniformity in production and procedure for identification of *Tendu* and *Ashitri* leaves. The requirements for arsenic and lead were deleted for they increase the cost of quality control without any proportionate utility. In the second revision issued in 1974, the proportion of wrapper was increased to 55 + 5 percent, requirement for chloride content deleted and a more practical test for burning quality was prescribed in the revision. In the third revision issued in 1992, various requirements of nicotine content, packing, marking and sampling were updated to bring the standard in line with the then existing manufacturing and trade practices. A machine smoking method for *bidis* was introduced as an amendment in 1999. During the fourth revision in 2016, the description of *bidi,* nicotine content of the tobacco mixture, packing, marking, sampling, testing conditions, and *bidi* smoking method were modified.

This fifth revision is being carried out for incorporation of an International method for the analysis of *bidi* smoke and a method for testing burning quality of *bidis* by using a linear smoking machine. Packing and marking clause has also been modified by removing ‘month and year of packaging’ and removing the specification of number of bidis to be packed in a packet or bundle as per *Legal Metrology* (*Packaged Commodity*) *Rules*, 2011.

The composition of the technical committee responsible for formulation of this standard is given at Annex G.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

BIDIS — SPECIFICATION

(Fifth Revision)

1 SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and tests for *bidis*.

1.2 This standard does not cover the requirements for flavour and aroma of *bidis*.

2 REFERENCES

The following standards contain provisions which, through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS/ISO No.	*Title*
1070 : 1992	Reagent grade water — Specification (*third revision*)
4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures (*first revision*)
5643 : 2019	Tobacco and tobacco products — Methods of test for tobacco (*third revision*)
9978 : 2021	Tendu leaf — Specification (*second revision*)
16121: 2013	Tobacco and tobacco products — Atmosphere for conditioning and testing
ISO 17175 : 2017	*Bidis* — Determination of total and nicotine-free dry particulate matter using a linear routine analytical smoking machine

3 REQUIREMENTS

3.1 Description

Bidis are smoking articles made by rolling the tobacco filler mixture solely by hand in a *Tendu* leaf or *Ashitri* leaf. Tobacco filler mixture consists of air cured, sun cured and/or other suitable tobaccos. *Bidis* shall be either conical or cylindrical in shape.

Conical *bidis* shall be completely closed at the broad end and only partly closed at the narrow end. The narrow end is flattened and secured with cotton thread to prevent unfolding of the wrapper and falling off of tobacco and also to make puffing easier.

Cylindrical *bidis* have a filter plug inserted for the purpose of filtering smoke. The other end of a filter *bidi* shall be completely closed by folding the wrapper leaf to prevent falling of tobacco.

3.2 Wrapper

The wrapper used in the manufacture of *bidis* shall be tender leaves of T*endu* (*Diospyrus sp.)* as prescribed in IS 9978 or A*shitri* (*Bauhinia sp*). These leaves can be identified by their characteristics before being used as wrapper (Annex A). The wrapper shall not exceed 60 percent by mass of the *bidis* when tested according to the method prescribed in Annex B.

3.3 Length per Piece and Mass of Tobacco per 1 000 *bidis*

The average length (mm) per *bidi* and mass of tobacco (g) per 1 000 *bidis* shall be declared by the manufacturers. On checking, each of these characteristics shall vary not more than ± 5 percent. The length of the bidi and the mass of tobacco shall be determined by the method given in Annex B.

3.4 Freedom from Mould Attack

Bidis shall be free from mould attack when examined visually.

3.5 Freedom from Tobacco Beetle Attack

The *bidis* shall be free from tobacco beetle attack when examined by the method prescribed in Annex C.

3.6 Tobacco Filler in *Bidis*

A minimum of 60 percent of the tobacco mixture contained in the *bidis* shall be in the form of flakes of size not capable of passing through a sieve made of wire of not more than 0.560 mm diameter and containing not less than 18 uniform apertures per linear distance of 25 mm.

3.7 Burn Additives

No burn additives shall be used in tobacco mixture or wrapper leaf for improving the burning quality of *bidis*.

3.8 Burning Quality

Bidis shall burn evenly when tested by the method prescribed in Annex D or Annex E. In case of any dispute, the method in Annex E will be the referee method.

3.9 The filler contained in the *bidi* shall also comply with the requirements given in Table 1.

3.10 Smoke Analysis

If *bidis* are to be analyzed quantitatively for their smoke emission level, then the machine smoking method prescribed in ISO 17175 can be employed. ISO 17175 specifies machine smoking method for the determination of total particulate matter as well as other methods for the subsequent determination of nicotine-free dry particulate matter present in the smoke of *bidis* generated and collected under strictly controlled set of parameters using a routine linear analytical smoking machine. The machine smoking method is useful for product evaluation in terms of smoke emission levels and product development.

4 PACKING

The *bidis* may be packed in bundles or packets of paper or other alternative packaging material. These bundles or packets in turn may be packed in boxes (*pudas*). The boxes (*pudas*) may then be packed in a bulk container as agreed to between the purchaser and the vendor. Packing of *bidis* shall comply with the applicable provisions contained in rules of the *Legal Metrology* (*Packaged Commodity*) *Rules*, 2011.

5 MARKING

The following particulars shall be legibly and indelibly marked on each bundle/packet and box (*puda*) in addition to the declarations as required under various applicable statutory Rules and Regulations:

a) Name of the trade mark,
b) Name and address of the manufacturer,
c) Description of contents,
d) Net quantity,
e) Any other marking required under the *Legal Metrology* (*Packaged Commodities Rules*, 2011), and
f) Statutory health warnings in the manner and in accordance with the provisions of the Rules framed under *Cigarettes and Other Tobacco Products Act,* 2003 (COTPA).

6 SAMPLING FOR TEST PURPOSES

The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in the Annex F or as agreed to between the purchaser and the vendor.

7 TESTS

7.1 The relative humidity shall be 60 ± 5 percent and the temperature 22 ± 2 °C inside the laboratory where the tests are to be carried out as given in 3.2 to 3.6, 3.8 and col 4 of Table 1.

7.1 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure Chemicals' shall mean chemicals that do not contain impurities which affect the test results.

Table 1 Requirements for Tobacco Mixture Contained in *Bidis*

(*Clause* 3.9)

Sl No.	Characteristics	Requirement	Method of Test, Ref to Clause of IS 5643
(1)	(2)	(3)	(4)
i)	Loss on heating, percent by mass, *Max*	12.0	**6**
ii)	Total alkaloids as nicotine (on dry basis) percent by mass, *Max*	5.0	**8**
iii)	Total ash (on dry basis) percent by mass, *Max*	23.0	**10**
iv)	Acid insoluble ash (on dry basis), percent by mass, *Max*	5.0	**11**

ANNEX A

(*Clause* 3.2)

IDENTIFICATION OF TENDU AND ASHITRI LEAVES

A-1 TENDU (*Diospyrus sp.*) LEAVES

Leaves are simple, up to 20 cm long and 9 cm wide, elliptical, with narrow base or if broad, with a decurrence on the petiole. Young leaves are hairy, mature glaborous above, hairy beneath, coriaceous nerve and reticulation raised above, secondary nerves impressed as broad furrows give the leaves wrinkled and thickened look.

A-2 ASHITRI (*Bauhinia sp.*) LEAVES

Leaves are simple, short petioled, broader than longer, up to 10 cm wide and 7.5 cm long, mostly clefted, divided or little less than half way down into two rounded lobes, entire, obtuse, coriaceous, clothed more or less densely beneath with grey pubescence, base usually carbate, main nerves 7 to 9 with distinct pattern of reticulation.

ANNEX B

(*Clause* 3.3)

DETERMINATION OF AVERAGE LENGTH AND MASS PER *BIDI* AND ALSO PERCENT MASS OF TOBACCO AND WRAPPER LEAF IN *BIDIS*

B-1 PROCEDURE

Take 100 *bidis* and condition as prescribed in IS 16121. Weigh the 100 conditioned *bidis* and record the mass (g). Then measure the length of each *bidi* in mm using a standard scale (suitable for measuring to the nearest 0.5 mm) and record. Carefully open these *bidis*, one by one, and separate the tobacco contained in them from the wrapper leaf. Separately weigh and record the mass (g) of tobacco and wrapper, so obtained.

B-2 CALCULATION

From the length and mass so recorded from 100 *bidis* (B-1), estimate the average length and mass per *bidi*, average mass of tobacco and wrapper contained in 1 000 *bidis* and the mass (percent) of tobacco and wrapper leaf per *bidi.*

ANNEX C

(*Clause* 3.5)

EXAMINATION FOR FREEDOM FROM TOBACCO BEETLE ATTACK

C-1 PROCEDURE

C-1.1 Take 5 *bidis* and visually examine the surface of each for the presence of any holes/borings by the tobacco beetle. Cut open these *bidis*, one by one, on a clean white sheet of paper.

C-1.2 Examine the material carefully for the presence of tobacco beetle (*Lasioderma serricorne*) in all stages, that is larval, pupal and adult (alive or dead), by naked eye (corrected for abnormal vision). A hand lens (magnification of 10 X) may also be used. In case a larger magnification is used, this fact may be stated in the test report.

ANNEX D

(*Clause* 3.8)

TEST FOR BURNING QUALITY

D-1 PROCEDURE

D-1.1 Ten randomly selected *bidis* from a production batch shall be tested for burning quality without selection and conditioning.

D-1.2 Light the *bidi* thoroughly by puffing. The *bidi* shall burn continuously and evenly if puffed for 2 s at 30 s interval. The colour of the ash shall not be black.

D-2 REPORT

The sample shall be deemed to have satisfied the test for burning quality, if all the *bidis* tested burn continuously up to 80 percent of their lengths.

ANNEX E

(*Clause* 3.8)

TEST FOR BURNING QUALITY OF *BIDIS* USING A LINEAR SMOKING MACHINE

E-1 DESCRIPTION

The method allows *bidis* to be tested for their burning quality on a linear smoking machine under controlled set of parameters

E-2 PROCEDURE

E-2.1 Laboratory Sample for Burning Quality Test

E-2.1.1 A representative samples of the *bidis* shall be drawn as prescribed in the Annex F or as agreed to between the purchaser and the vendor.

E-2.1.2 Representative sample *bidis* shall be conditioned as prescribed in IS 16121.

E-2.1.3 *Bidis* will be selected on mass basis (mean mass ± 30 mg), the mean mass having been determined as per the method prescribed in Annex B.

E-2.1.4 The *bidis* selected on mass basis (**E-2.1.3**), shall be further selected on length basis (mean length ± 2 mm), mean length having been determined as per the method prescribed in Annex B.

The *bidis* selected on the basis of mass and length will form the laboratory sample and 10 *bidis* will be used for conducting burning test.

E-2.1.5 *Marking Special Butt Length*

The *bidis* (**E-2.1.4**) shall be marked at one fifth (20 percent) of its length from the mouth end by a soft pen and a line will be drawn around the *bidi* at the marked spot without damaging the *bidi*. The mean length of selected *bidis* (**E-2.1.4**) shall be used to locate the spot for marking this special butt length. In no case, the marking shall be less than 11 mm from the mouth end.

E-3 TEST METHOD

E-3.1 The test shall be carried out under ambient conditions as prescribed in IS 16121.

E-3.2 Smoking Machine

A linear smoking machine equipped with a *bidi* holder shall be used to determine the burning quality of *bidis.* The smoking machine, smoking regime and smoking process shall comply with the requirements prescribed in ISO 17175. However, the *bidi* smoking plan and process will be as per **E-3.3**.

> NOTE — Fitting of the filter holder with a Cambridge filter pad is optional but it is highly advisable to smoke with the filter pad fitted in the filter holder. If smoked without the filter pad, the particulate matter will condense in the tubes inside the machine. It will be very difficult to clean the tubes and the machine performance will be adversely effected.

E-3.3 Smoking Plan and Process

Ten marked *bidis* (**E-2.5**) will be smoked one by one only on one channel fitted with a *bidi* holder. *Bidi* will be inserted in the *bidi* holder and smoking started as prescribed in ISO 17175 (puff volume 35 ml, puff duration 2 s and puff interval 30 s). Maximum two *bidis* will be smoked on one filter pad as the filter pad will be blocked due to deposition of particulate matter. Used filter pad will be replaced with a new filter pad. The tester will observe the smoking process and note down his observations for all the 10 *bidis*.

E-4 REPORTING

The sample shall be deemed to have satisfied the test for burning quality if all the *bidis* tested burned continuously up to the butt mark under test conditions.

ANNEX F

(*Clause* 6)

SAMPLING OF *BIDIS* FOR TEST PURPOSES

F-1 GENERAL REQUIREMENTS FOR SAMPLING

F-1.1 In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

F-1.2 Precautions shall be taken to draw the samples, so as to protect from loss or gain of moisture and from adventitious contamination.

F-1.3 The samples shall be placed in clean and dry receptacles. The receptacles for sample shall be sealed hermetically and marked with full details of samples as given under 5.

F-1.4 Sample shall be stored in such a manner that the conditions of storage do not unduly affect the quality of the material.

F-1.5 The sampling shall be done by a person agreed to between the purchaser and the vendor in the presence of the purchaser (or his representative) and the vendor (or his representative).

F-2 SCALE OF SAMPLING

F-2.1 Lot

All the bulk containers in a single consignment of the material pertaining to the same brand shall constitute a lot. If the consignment is declared to consist of different brands, the bulk containers belonging to the same brand shall be grouped together to constitute separate lots.

F-2.2 The samples shall be tested for each lot for ascertaining conformity of the materials to the requirements of this specification.

F-2.3 The number of bulk containers to be chosen from a lot shall depend on the size of the lot and shall be in accordance with Table 2.

Table 2 Number of Bulk Containers to be Chosen for Sampling

(*Clause* F-2.3)

Sl No. (1)	Lot Size N (2)	No. of Bulk Containers to be Chosen n (3)
i)	Below 5	2
ii)	6 to 10	3
iii)	11 to 20	4
iv)	21 to 50	5
v)	51 to 100	6
vi)	Over 100	7

F-2.4 These bulk containers shall be chosen at random from the lot and for this purpose random number table (*see* IS 4905) as agreed to between the purchaser and the vendor shall be used. In case such a table is not available, the procedure given in **F-2.4.1** shall be adopted.

F-2.4.1 Arrange all the bulk containers in the lot, in one order and count them as 1,2,3 up to r, in a systematic manner, where r is equal to the integral part of the value N/n, N being the total number of containers in the lot and n the number of containers to be chosen (*see* Table 2). Every r^{th} container thus counted shall be separated until the requisite number of containers is obtained from the lot to give the sample for test. If r comes out to be a fractional number, its value shall be taken as equal to the integral part of it.

F-3 PREPARATION OF SAMPLES

F-3.1 Individual Samples

Enough boxes (*pudas*) shall be taken out at random from each selected bulk container of the lot to give 1 000 *bidis*. Out of these, randomly selected 100 or more *bidis* will be kept aside properly packed and used for making composite sample of *bidis* (*see* F-3.2.2) for conducting smoking tests (**3.10,** Annex D and Annex E).

From the remaining *bidis*, 100 *bidis* shall be first tested for mass of tobacco contained in them and the mass of wrapper leaves (*see* Annex B), 5 for freedom from mould attack (*see* **3.5**) and 5 for freedom from tobacco beetle attack (*see* **3.5**). If these tests are found satisfactory, the remaining *bidis* shall be opened, the tobacco so obtained shall be mixed together thoroughly and then divided into three parts each of about 25 g. Each part shall constitute an individual sample representing the bulk container and shall be transferred immediately to thoroughly clean and dry receptacles and sealed air-tight. The receptacles shall be labelled with the necessary particulars given in **5**.

F-3.1.1 The individual samples of the tobacco mixture, extracted from the *bidis* from each bulk container (*see* **F-3.**1) so obtained from the lot, shall be divided into three sets in such a way that every set has an individual sample representing each selected bulk container. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee, and all the three sets shall bear the seals of the purchaser and the vendor.

F-3.2 Composite Sample

F-3.2.1 *Tobacco*

From the portion of the tobacco left over after preparing the individual sample (*see* **F-3.1.1**), equal quantities of tobacco mixture shall be taken for each selected bulk container and mixed together well to form a composite sample of about 150 g for the lot.

F-3.2.2 *Bidis*

The 100 *bidis*, kept aside from each bulk container (*see* **F-3.1**), will be mixed together to form a composite sample for the lot to be used for smoking tests (*see* **3.10**, Annex D and Annex E). All the conditions of the following clauses relevant to composite sample will be equally applicable to the composite sample of *bidis*.

F-3.2.3 The composite samples shall be divided into three equal parts, one for the purchaser, another for the vendor and the third for the referee, and all the three sets shall bear the seals of the purchaser and the vendor.

F-3.3 Referee Sample

Referee sample shall consist of a set of individual samples (*see* **F-3.1)** and composite samples (*see* **F-3.2**), marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place agreed to between the two.

F- 4 TESTS

F-4.1 Tests for the determination of loss on drying and nicotine shall be conducted on each of the individual tobacco samples in a set (*see* **F-3.1**).

F-4.2 Tests for the determination of the remaining characteristics shall be conducted on the composite tobacco sample (*see* **F-3.2.1**).

F-4.3 Tests for burning quality and smoke analysis shall be conducted on the composite bidi sample (*see* **F-3.2.2**) as per the methods prescribed in **3.10**, Annex D and Annex E.

E-5 CRITERIA FOR CONFORMITY

F-5.1 The lot shall be declared as conforming to the specification, when:

a) Each of the test results for loss on heating and nicotine satisfies the corresponding requirement specified in Table 1. If, however, one or more test results do not satisfy the corresponding requirement, the conformity of the lot shall be ascertained in accordance with **F-5.1.1**; and

b) The test results on the composite sample for the remaining characteristics satisfy the corresponding requirements specified in Table 1.

F-5.1.1 In case one or more of the test results do not satisfy the requirements for loss on heating, and nicotine, the following procedure shall be adopted for determining conformity of the material in respect of these characteristics:

The mean (x) and the range (R) of the corresponding test results shall be calculated as:

Mean (x) = Sum of the test results/Number of the test results

Range (R) = Difference between the highest and the lowest values obtained for the test results. The appropriate expressions as shown in col 6 of Table 3 shall be calculated.

Table 3 Criteria for Conformity

(*Clause* F-5.1.1)

Sl No. (1)	**Characteristics** (2)	**Test Results** 1,2,3 … *n* (3)	**Average** (4)	**Range** (5)	**Criterion for Conformity** (6)
i)	Loss on heating, percent by mass	–	X_1	R_1	$X_1 + 0.4\ R_1 < 12.0$
ii)	Nicotine, percent by mass	–	X_2	R_2	$X_2 + 0.4\ R_2 < 5.0$

NOTE — If the values of these expressions satisfy the relevant conditions as given in col 6 of Table 3, the lot shall be deemed to have satisfied the requirements for loss on heating and nicotine.

ANNEX G

(*Foreword*)

COMMITTEE COMPOSITION

Tobacco and Tobacco Products Sectional Committee, FAD 04

Organization	*Representative(s)*
Central Tobacco Research Institute, Rajahmundry	Dr D. Damodar Reddy (***Chairman***)
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Smokeless Tobacco Federation (India), Delhi	Shri Sanjay Bechan
The Association Chambers of Commerce and Industries of India (ASSOCHAM), New Delhi	Shri Surajit Ghosh Dr Madhavan Sridharan (*Alternate*)
The Indian Tobacco Association, Guntur	Dr P. Srinivas Hon Secretary (*Alternate*)
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Organization	*Representative(s)*
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BIS Directorate General	Shrimati Suneeti Toteja, Scientist 'E' and Head (FAD) [Representing Director General (*Ex-officio*)]

Member Secretary

Shrimati Navita Yadav
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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: FAD 04 (16475).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi